# Comparison of 10-year erosion plot data with a runoff simulation model

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Ten years of data have been analysed from erosion plots established at El Teularet, 60 km SW of Valencia, in semi-arid SE Spain. The plots are at an elevation of 760m, with annual precipitations of 609 mm-749 mm. Plots, on a gentle uniform slope, have lengths of 1, 2, 4, 8 and 16 m and have been treated with herbicide to retain a vegetation-free surface. Runoff and sediment loss have been collected after 312 of the 470 recorded rainfall events on the plots. Where data collection follows more than a single event, a power-weighted combined rainfall is used for the effective storm size.

In any rainfall event, discharge increases consistently with plot length, but runoff decreases. In the absence of intensity data, runoff and sediment loss are plotted against effective storm size and plot length, generating consistent 2.2 power relationships, though with appreciable scatter. These relationships, however, break down for large storms where predicted runoff can exceed storm rainfall. An alternative formulation, with a threshold defined as the storm rainfall at which there is 50% runoff, is applicable both to an existing runoff simulation model and to the plot data, and shows more appropriate behaviour for high and low extreme events. For the plot data, the median (and quartile) threshold values are 47 mm (34-65 mm) for the 1 m plot length and 123 mm (95-192 mm) for the 16 m plot, thresholds increasing as the 1/3 power of plot length. Erosional loss increases linearly with runoff, with a weak (0.15 power) increase with plot length, indicating the dominance of detachment limited removal.